REVIEW

OF THE

FOREST ADMINISTRATION

IN THE

SEVERAL PROVINCES UNDER THE GOVERNMENT OF INDIA,

For the year 1876-77.

BY

D. BRANDIS,

INSPECTOR-GENERAL OF FORESTS TO THE GOVERNMENT OF INDIA.

Dated the 15th November 1878.

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CHAPTER I.

RESERVES AND LEASED FORESTS.

AREA.

Summary. THE following statement exhibits the area of the demarcated reserves at the close of the year, as entered in the provincial reports :—

PROVINCES.	AREA OF RESERVES ON		REMARKS.
	31st March 1876.	31st March 1877.	
Bengal	2,585	3,390	
North-Western Provinces	2,421	2,568	Increase apparent, chiefly due to corrections.
Punjab	3,700	3,782	Increase apparent, areas uncertain. [2]Includes 257 square miles of leased forests.
Oudh	824	824	
Central Provinces	2,332	2,391	
British Burma	613	640	
Coorg	380	381	
Ajmere	91	100	
Assam	1,033	1,910	
TOTAL	13,979	15,986	
Mysore	[2]449	449	
Berar	661	1,400	
GRAND TOTAL	15,089	17,835	

The area at the close of 1875-76 aggregated 15,089 square miles; there has therefore been an increase of 2,746 square miles during the year, of which however 229 square miles are not a real increase, but are due to alterations and corrections made in the returns of the Punjab and the North-Western Provinces.

Bengal.

2. In *Bengal*, 809 square miles were added, so that the area of reserved forests was increased from 2,585 to 3,390 square miles. Of this area 1,057 square miles are sâl forests with savannah, mixed forests and lower hill forests containing sâl, *viz.*, 500 square miles in Chota Nagpore and the Sonthal Pergunnahs and 557 square miles at the foot of the hills and in the lower hills of the Darjeeling and Jalpáiguri districts. Associated with the Sub-Himalayan forests in the two last named districts, but chiefly in Jalpáiguri, are 107 square miles of khair and sissoo forests, mostly forming belts in the vicinity of streams and rivers.

In the review for 1875-76 the area of sâl, savannah, khair and sissoo forest was stated as 766 square miles; there has therefore been an addition to this important class of forest of 398 square miles.

At the close of 1875-76 the area of the higher hill forests in the Darjeeling district, at an elevation above 6,000 feet, amounted to 50 square miles; this has been increased to 75 square miles. These higher hill forests are of great importance, not only for the supply of the station of Darjeeling, but chiefly of the numerous tea plantations in the Darjeeling district. The sundri forests which supply the eastern districts of Lower Bengal with wood and timber have been increased from 1,199 to 1,581 square miles. The reserves formed in the Chittagong mixed forests have remained at 570 square miles.

The chief timber trees in the reserved forests of the Lower Provinces of Bengal are sâl, sissoo and sundri; but they also, as well as all forests in India, contain many kinds, which, when better known, may be important articles of trade. Already a number of woods, formerly unknown, are now used largely for the manufacture of tea boxes, and it obviously is of the utmost importance for the success of forest administration that the number of woods used and sold otherwise than as fuel should be extended.

North-Western Provinces.

3. In the *North-Western Provinces*, the area of the reserved forests at the close of 1875-76 was stated to have been 2,421 square miles. Owing to corrections made, that area appears in the present report as 2,564 square miles, which was increased during 1876-77 to 2,568 square miles.

Punjab.

4. In the *Punjab*, there is still some uncertainty regarding the area of the reserved forests; the total shown in the review for 1875-76 was 3,700 square miles, while the total shown in the Conservator's report for 1876-77 is 3,782 square miles, which has been entered in the present review. This includes 257 square miles of leased forests, *viz.*, 38 in Bashahr and 219 in Chamba; these forests however are not demarcated, though the work of demarcation in the Chamba state is progressing.

Central Provinces.

5. In the *Central Provinces*, the area has been increased by the addition of 58 square miles in the Moharli reserve, which is now a most valuable and extensive compact forest of 230,000 acres, stocked with bijasâl (*Pterocarpus Marsupium*) and other kinds of timber, used in the open country of the Wardha valley, and with bamboos, for which there is a constant demand in the same direction.

Demand for the produce of the reserved forests.

6. Considering the reserved forests in the Central Provinces as a whole, the demand for their produce, with the exception of bamboos and some of the more valuable timbers, is as yet insignificant. The gross revenue from these estates during 1876-77 was Rs. 1,84,255 from 2,391 square miles, or not quite 2 annas per acre, and during the last five years the rate has fluctuated from ·9 to 2·7 annas per acre. In the concluding chapter of his report, the Conservator, Captain Doveton, records his views on this subject as follows:—

"As is only natural to expect, the most extensive and productive forests are situated where, so far as the demand is concerned, they are least wanted, *i. e.*, where the population is smallest. It is true that there is every prospect of a large portion of these forests becoming excessively valuable; and in Moharli we have an instance of a largely increasing demand on a forest that but a few years ago was considered too inaccessible to be worth reserving; but, as a rule, their chief value as sources of supply is prospective. In this fact, we have one important reason for the Central Provinces not returning a larger revenue than they do. The revenue must depend on the demand, while the demand on the forests is regulated by the population and the acces-

sibility of the forests. Moreover, the selling rates are materially affected by the proximity, or otherwise, of the forests from the well-populated country; and, as an illustration of this fact, I will quote the relative value at the present time of bamboos at Sonawani and in the West Pench forests within the Satpura Reserve. The value in the former is about Rs. 7 per 1,000, though they are sold at Rs. 5 to encourage consumption, while west of the Pench they sell for as much as Rs. 25 per 1,000. The same material, if produced at Nagpur, would be worth Rs. 50, near Katol or Umrer about Rs. 35, and near Arvi or Ashti about Rs. 50 per 1,000.

"The supply of this product for the places mentioned and the country about them is at present drawn from forests varying from 40 to 70 miles distant; and, as might be expected, the consumption is much short of what it would be if the produce were procurable closer at hand. It is evident, therefore, that if bamboos, which I have only taken as an example, were produced in sufficient quantity near the places mentioned, the result would be a very considerable increase of revenue. In many instances, Government has, within easy reach of the more thickly populated country, tracts of forest land of greater or less extent; but, as might be expected, they are comparatively unproductive; and what I would advocate is, that the most advantageously situated of these should be taken in hand by the Forest Department with the view of producing in them those articles of forest produce for which there is the most certain demand, but the supply of which has to be obtained from a distance, or falls short of the demand. Such ends cannot, however, be accomplished without a moderate outlay; but I am satisfied that whatever outlay may be necessary will bring in some handsome return to Government."

The good management of the reserved forests in the Central Provinces would contribute more to promote the well-being of a large population in the towns and agricultural districts if these forests were not mostly situated at a great distance from the open and well-cultivated country. The general policy of the Forest Department throughout the country must be to encourage the consumption of forest produce; and consequently while, on the one hand, it is proper to extend the existing reserved forests and to form additional reserves in the immediate vicinity of large centres of consumption and of the open densely inhabited country; on the other hand, the extension of cultivation to the very edge of the reserves should be encouraged wherever there is reason to believe that a sufficient area of forest has been demarcated and reserved.

Special importance of forests in the Central Provinces.

7. It is most gratifying to notice the steady increase of cultivation in the Central Provinces; the country is favoured in many respects, and though hitherto agriculture has been its mainstays, yet manufacturing industry in several branches has made a start, and a large and steady increase of wealth is in store for its inhabitants. But though coal is produced, it is not likely to be found in many places, and wood and charcoal will be required to maintain the manufacture of iron and to feed the engines required for the cotton mills and other factories which will doubtless be established in many places; and not for fuel only, but for building and other purposes also, will the demand for wood and bamboos increase steadily, and forest conservancy in these provinces has therefore a peculiar significance. In Bengal, Oudh, and the North-Western Provinces, as well as in many other parts of India, the Government forests are confined to a few limited and remote districts, while the vast expanse of cultivated area is without any forest. In the Central Provinces, if the present reserves are maintained and extended in the direction here indicated, Government forests will in many districts interlace with cultivated lands, and the produce of these forests will be readily available for purposes of industry and agriculture. If forest administration in these districts is permitted to progress as it has commenced, the distribution of forests will be similar to what exists in France and Germany; they will be surrounded by rich fields and flourishing towns and villages, and their produce will serve to facilitate and will stimulate the progress of agriculture and industry in the country.

British Burma.

8. In *British Burma*, the additions made during the year to the area of reserved forests were insignificant, but preparations for the demarcation of larger areas were well advanced at the close of the year.

Ajmere.

9. In *Ajmere* and *Mhairwarra*, the aggregate area of the eleven demarcated reserves is now reported to amount to 100½ square miles. The object in protecting these lands has been explained in the reviews for 1874-75 and 1875-76. It is an experiment on a large scale, chiefly undertaken in order to determine how far the water-supply of the tanks, upon which cultivation in these districts chiefly depends, can be improved by increasing the growth of trees and brushwood on the hills, the drainage from which feeds these tanks. Success, however, can only be expected in this experiment if this area is kept under strict protection.

Assam. 10. In *Assam*, 50 square miles were demarcated in the Khasi hills; 82 square miles of caoutchouc-producing forests were added in the Darrang district, and seven forest tracts, aggregating 745 square miles, were demarcated in Cachar.

Berar. 11. In the *Hyderabad Assigned Districts*, an addition of 326 square miles was made to the reserved forests of the Melghât. The circumstances which led to the demarcation of this area and to the abandonment of all restrictions on the area outside the reserves, were explained in paragraphs 29 and 30 of the review of 1874-75 and in paragraph 44 of that for 1875-76.

It was also explained in the last-named review that certain forests had been demarcated as district reserves, which are intended to be maintained under forest, and which in the report for 1876-77 have consequently been classed under reserves. This adds 412 square miles to the area of reserves, of which 218 square miles are in the Wun and 74 in the Amraoti district, the remainder being in Akola, Bassein, Buldana, and Ellichpur. A small proportion of these areas consists of babul forests, situated in the Púrna Valley, but the larger proportion are on hilly ground and are stocked with mixed though generally very poor scrub with scattered trees. But the maintenance, and if possible the improvement, of the forest growth on these dry and hot hills will eventually be found to be a most beneficial measure for the agricultural population, inasmuch as these tracts will furnish wood, bamboos, an abundance of grass, and in many cases pasture.

Expenditure. 12. The total outlay charged in the accounts of the year for demarcation was Rs. 27,086, of which there was spent in Bengal Rs. 6,833, British Burma Rs. 4,624, the Punjab Rs. 3,932, and the Central Provinces Rs. 2,288. Under compensation for land and rights Rs. 7,894 was charged, of which Rs. 4,414 was in the North-Western Provinces.

Protection from fire.

Summary. 13. The following statement exhibits the area of forests protected from fire during the year:—

Area of tracts protected from fire in 1876-77.

Provinces.	Acres.	Total outlay from commencement.	Date to which expenditure has been incurred.	Year when fire conservancy commenced.
Bengal	66,127	2,246	30th June '77	1876
North-Western Provinces	3,01,330	25,716	Ditto ..	1870
Punjab	...	...	...	...
Oudh	30,027	8,166	30th June '77	1872
Central Provinces	5,04,824	66,860	Ditto ...	1864
British Burma	70,792	36,288	Ditto ...	1871
Coorg	...	...	...	...
Ajmere	44,228	1,897	31st March '77	1874
Assam	59,290	6,510	30th June '77	1873
Total	10,76,618	1,47,683		
Mysore	...	...	...	...
Berar	6,10,142	7,425	31st March '77	1870
GRAND TOTAL	16,86,760	1,55,108		

In most provinces the record of fire protection is now carried on until the commencement of the rains, that is, until the 30th June, and where this is the case, the figures of the statement show the area successfully protected throughout the dry season of 1877.

14. It was explained in the review for 1875-76 that in *Bengal* the forests which had been protected in previous years were burnt in 1876. Protection, however, has recommenced, and an area of 66,127 acres was successfully protected until 30th June 1877, including besides the Sitapahar reserve in Chittagong, the Bamunpokri plantation, the Sivok and Muraghat sâl forests, and a large portion (more than one-half) of the Buxa reserve (47,300 acres). Fire protection in Bengal is a more difficult task than in most forests of North and Central India, chiefly on account of the extremely luxuriant and rapid growth of tall grass in the extensive savannahs and tracts of incompletely stocked forest. Under these circumstances, every effort must be made, by planting and by protection from fire cutting, to increase the cover over-head, at least in a broad outer belt around the reserve, and thus gradually to suppress the luxuriant growth of grass in this outer belt. The Conservator correctly remarks that it is impossible to say whether his efforts will prove successful in an unfavourable year until he has established thick belts of trees along the boundaries of all forests to be protected. As a beginning he has planted a belt of sâl 100 feet broad on the southern boundary of the Buxa reserve. Bengal.

15. In the *North-Western Provinces*, certain forests in the hills of Jaunsar, mentioned in paragraph 4 of the review for 1873-74, have been protected from fire continuously since 1870; in the Dehra Dun division a portion of the Bulawala sâl forest is reported to have been protected continuously since 1872; in Kumaun a portion of the sâl forest near Mohan; and in the Bijnor district, the Rehar forest as well as the Dhikala forest in Garhwal have been protected since 1874. The protection of the remainder dates from 1875 and 1877, and the aggregate area successfully protected to the end of the dry season of 1877 has been 301,330 acres. North-Western Provinces.

16. In *Oudh*, fire protection progresses slowly, and the area successfully protected is small. The reason is, as explained in previous reviews, that the measures taken to regulate pasture in the forests have not progressed at all, and that, with the exception of limited areas, the whole of the Oudh forests are grazed over and consequently are burnt annually. In the areas which it was possible to protect, and where protection has been attempted, success has been steady. They are all sâl forests, *viz.*, 19,120 acres, in the Dudua Block of the Kheri division, and 10,907 acres in three blocks of the Bharaich division. Oudh.

17. From the *Central Provinces* steady progress is reported. The gradual extension of this work will be apparent from the following figures:— Central Provinces.

	Acres.	
1864	23,000	Bori.
1867	49,000	Bori, Jagmandel, and Choharigogarh.
1871	109,000	The above and Satpura, Bijeragogarh, and Singrampur.
1874	133,460	
1877	504,824	

The areas added in 1877 were chiefly in the western reserves, *viz.*, Punassa, Rajaborari, Saoligarh, and Kamapur. The aggregate area of the reserves in the Central Provinces is 1,530,000 acres, so that nearly one-third of the entire area is under strict protection from fire. Considering that formerly fires were an annual phenomenon in these forests, an idea can be formed of the vast importance of these operations. Fire protection continued for ten years and, combined with otherwise suitable management, converts a badly stocked and unproductive jungle into a dense luxuriant forest.

18. In *British Burma*, the difficulty of fire protection is not less than in Bengal, and success has as yet been extremely uncertain. It was stated in last year's review that several forests had been continuously protected since 1870, the chief of which are Kwaymakine and Boben in Tharrawaddy, and the Phapoon and Sinzway forests in the Yoonzaleen district. Of these the Sinzway forest, measuring 8,960 acres, was burnt completely in April 1877, and a teak plantation twenty miles north of Rangoon, measuring 683 acres, was likewise burnt. On the other hand, several additional areas were taken in hand, bringing up the total area protected during the dry season of 1877 to 70,792 acres. The expenditure on this account was extremely high, Rs. 14,850, during the year. British Burma.

19. In *Coorg*, the Conservator reports that a commencement in cutting fire lines round the forests has been made. In this small province, the forests Coorg.

have a special significance, and it is most desirable that they should be strictly protected and steadily improved. Coorg is bounded on the east and north by Mysore, on the south by Wynaad, and on the west by Malabar and South Kanara. In Mysore, reserved forests have been demarcated, and are at present under strict protection and careful management, but it is impossible to foresee whether forest conservancy will be maintained after the province shall have ceased to be under British rule. In Wynaad certain limited forest tracts are the property of the State, but the boundaries are not clearly defined; there have been encroachments, and it is doubtful what proportion of this area will be permanently maintained as Government forest. In Malabar, all forests are private property, and in South Kanara also, where formerly Government was supposed to possess extensive forest lands, nearly the whole of the forest seems now to be regarded as private property, and kumri cultivation, which had long been prohibited, is again generally practised. Coorg is thus on all sides surrounded by provinces, in which the maintenance of forest conservancy is doubtful. Under these circumstances, the denudation of the provinces by which Coorg is surrounded will, if peace and good Government continue, only be a matter of time. What the effects of such extensive denudation upon the general prosperity of the country will be, it is impossible to foretell, but the maintenance of a large forest area in Coorg seems under these circumstances to be highly desirable. Moreover, Coorg is a mountainous country, and is situated near the line of ghâts. We cannot yet attempt to define the influence which the forest growth on and near the line of the Western Ghâts exercises upon the climate of the Peninsula, but we know that it has an undoubtedly great influence in regulating the water-supply in the rivers; and wherever Government has the power to do so, every effort should be made to guard against the denudation of the line of ghâts. In the Khandesh, Nasik, Ahmednagar, and Poona districts, very little forest is left on and near the line of ghâts; in Sattara and Belgaum large tracts had been set apart to be permanently maintained as forest, but since 1874 kumri cultivation has again been permitted, and denudation of large areas will be the inevitable consequence of this measure. In North Kanara, vigorous efforts have been made to secure the maintenance of large forest reserves, and if these efforts are successful, the benefit to the country will be great. As already explained, the maintenance of the forests on the ghâts of Mysore and Wynaad is doubtful. On the Nilgiris, denudation is believed to have made more progress than is desirable. South of Coimbatore there are the ghât forests of Cochin and Travancore, over which Government has no control, and contiguous to them are the forests of Madura and Tinnevelly, the greater portion of which is now held to be private property.

Coorg is a small province only, measuring 2,000 square miles; the demarcated reserves measure 380 square miles, and the most perfect forest conservancy on this limited area cannot be expected to have more than a local influence, but it clearly is the duty of Government, when such can be done, to set an example of effective forest administration on the line of ghats, and after having effected demarcation, the protection from fire of these reserves is the next step. If the forest staff in Coorg is too weak to maintain an effective fire conservancy, it must be strengthend, for the maintenance and improvement of these forests has a special significance.

Ajmere. 20. In *Ajmere*, fire conservancy has been successful in the greater portion of three reserves and over an area of 44,228 acres. It is an essential condition of the success of this experiment that these reserves should be rigidly protected from fire. Unless this is accomplished, no real improvement in the Forest growth can take place, and no beneficial effect as regards the surface drainage can be expected.

Assam. 21. The efforts made during the year to protect the forest reserves in *Assam* from fire were successful, and were greatly facilitated by frequent showers during March and April. The aggregate area protected has gradually been increased from 11,520 acres in 1874 to 59,290 acres, which was the area protected to the end of the dry season of 1877.

Mysore. 22. In *Mysore*, the Devaraydurga forest (11,520 acres) has now been successfully protected during a series of years, and it is satisfactory that though it was necessary, on account of the drought and consequent scarcity of fodder in the district to open it to grazing early in the season, only 5 acres of it were

burnt. The Shankargudda forest in the Nagar division was protected during the dry season of 1876, and it was again successfully protected in 1877. Great efforts were made to protect the Begur and Ainur Mariguddi forest in the Ashtagram division, but the fire came across from the Wynaad forests in the Madras Presidency, and the greater part of the former and the whole of the latter were burnt. Altogether it is reported that the area protected during the dry season of 1877 amounted to 37,500 acres. Fire protection was rendered difficult, and in many cases impossible, by the necessity of opening the forests to grazing on account of the drought and famine. The outlay on fire protection amounted to Rs. 6,439, which is high.

Berar.

23. In *Berar*, fire protection continues on a large scale and upon the whole with uniform success. The area protected during 1876-77 is stated to have been 610,142 acres, comprising more than two-thirds of the reserved forests, which measure 1,400 square miles or 896,000 acres. The return, however, is only carried on to the 31st March, so that it is not known whether any portion of this area was burnt in the latter part of the dry season. The outlay during the year on this account was only Rs. 2,171.

Expenditure.

24. The total cost of fire conservancy during the year, as entered in the annual accounts, has been Rs. 51,416, of which Rs. 14,850 were expended in Burma, Rs. 10,219 in the Central Provinces, and Rs. 9,225 in the North-Western Provinces.

Plantations.

Summary.

25. The following statement exhibits the area of the plantations at the commencement of the year and the extensions made during the year. The figures of area and cost at the commencement of the year, entered in the returns received from the following provinces, do not agree with the figures entered for the same date in the returns of 1875-76. In *Bengal*, the cost on 31st March 1876 was stated to have been Rs. 37,998. For the 1st April 1876 the entry is Rs. 37,498 or Rs. 500 less, which has been omitted as it is said to have been spent on failures and on account of other provinces. In the *North-Western Provinces*, the returns for 1876-77 show an excess of 35 acres and Rs. 66 on account of a plantation in Naini Tal, which was omitted from the returns of 1875-76. In the *Punjab*, the returns show a reduction of 1,116 acres and an increase of Rs. 55,844 in the expenditure caused by a number of corrections. In *British Burma*, the Prome plantation has again been included, and several other corrections have been made, by which the area has been increased by 90 acres and the cost by Rs. 29,347. In *Oudh*, the returns showed 351 acres at the close of 1875-76; but the return for 1876-77 is blank, the plantation in question having been burnt.

Plantations, 1876-77.

Provinces.	Area at the commencement of the year.	Area added during the year.	Area excluded during the year.	Area at the close of the year.	Previous cost.	Outlay during the year.	Total outlay.	Remarks.
	Acres.	Acres.	Acres.	Acres.	Rs.	Rs.	Rs.	
Bengal	490	34	...	524	37,498	15,245	52,743	
North-Western Provinces	1,772	211	...	1,983	25,124	3,759	28,883	
Punjab	12,661	1,185	..	13,846	5,80,874	53,490	6,34,364	
Oudh	...	...	...	...	...	...	...	
Central Provinces	...	...	...	...	...	...	...	
British Burma	2,743	323	...	3,066	2,34,143	23,913	2,58,056	
Coorg	470	...	...	470	26,415	1,242	27,657	
Ajmere	310	1	...	311	4,091	2,869	6,960	
Assam	502	120	2	620	18,226	5,110	23,336	
Total	18,948	1,874	2	20,820	9,26,371	1,05,628	10,31,999	
Mysore	3,256	646	...	3,902	1,01,202	28,379	1,29,581	
Berar	963	703	225	1,441	28,846	3,502	32,348	
	4,219	1,349	225	5,343	1,30,048	31,881	1,61,929	
GRAND TOTAL	23,167	3,223	227	26,163	10,56,419	1,37,509	11,93,928	

Bengal.

26. In *Bengal*, the plantations are as yet chiefly experimental; in the Darjeeling division 144 acres are stocked with oak and magnolias, 42 acres with conifers, and 155 acres (at Bamunpokri) with teak and toon. In Chittagong, arrangements have been made to plant annually 100 acres with teak and toon mixed, and 171 acres were reported as being stocked at the close of the year.

North-Western Provinces.

27. In the *North-Western Provinces*, an extension of 61 acres was made in the hills of Jaunsar, chiefly stocked with deodar, and another of 120 acres, chiefly stocked with sâl, in the Gorakhpur forests.

Punjab.

28. In the *Punjab*, 940 acres were added in Changa Manga stocked with sissóo and mulberry: 451 acres in that plantation were thinned, stocked with sissoo forest, four and five years old, and 20 and 35 feet high respectively. The quantity of saleable material obtained was 23 maunds per acre. The total area of Changa Manga is now 9,112 acres, which have cost Rs. 3,18,031 or on an average Rs. 35 per acre. This includes the cost of irrigation and all establishments. Some additions were made in the Sailaba plantations near Lahore; and in Rukh Bauli Lehna Singh an attempt was made to stock 100 acres of bad soil, exposed to overflow during the rains.

British Burma.

29. In *British Burma*, 322 acres, chiefly stocked with teak and pymma, were added to the Magayee plantation, and the Conservator reports that it has proved an entire success and is by far the best of any cultivation as yet made at Magayee. The total area artificially stocked with teak in this forest now aggregates 1,033 acres, which have cost Rs. 75,575, or at the rate of Rs. 73 per acre. At first sight this compares unfavourably with Changa Manga in the Punjab. But the wages at Magayee are on an average 12 annas and at Changa Manga 3 to 4 annas per diem. The area stocked with teak does not form one compact block, but a number of broad belts surrounded by the original forest, so that it may be hoped that eventually the teak will spread by self-sown seed from these planted belts into the forest which surrounds them, and that thus a large area will be converted into teak-producing forest. The plantation is only a few miles from the railway, and the total distance from Rangoon is only 40 miles, so that there is every prospect of a good sale of all thinnings. If the plantation is continued on this plan of alternating belts of teak and original forest, a very large area will eventually be converted into teak-producing forest, and at the same time the unavoidable risks of pure teak forest will be avoided.

Assam.

30. In *Assam*, 120 acres were added to the plantations, all stocked with caoutchouc. The success of these caoutchouc plantations is, however, not yet assured, and it is clear from the facts recorded in the report, that caoutchouc planting has not yet emerged from the experimental stage.

Mysore.

31. In *Mysore*, the plantations suffered much from the long continued drought of 1876 and 1877. It was intended to plant up an area of 930 acres in what are called the fuel plantations in the dry districts of Bangalore, Kolar and Tumkur, and the land had been prepared, but owing to the unfavourable season only 525 acres were actually planted up. These fuel plantations are now nine in number; their area aggregates 2,758 acres, the largest measuring 450 and the smallest 168 acres. The chief difficulty has been to obtain the land for these plantations, hence the large number of small plots. This is most unfortunate, for it increases the expense of protection and management; and, financially, it is hardly possible that such small plots should prove remunerative. Some additions made to other plantations bring up the total area planted in Mysore to 3,902 acres, which have cost an aggregate of Rs. 1,29,581 or on an average Rs. 31 per acre.

32. In *Berar*, an addition of 703 acres is recorded, bringing up the aggregate planted area to 1,441 acres. Although in 1875-76 an area of 1,375 acres was excluded as imperfectly stocked, it is not certain yet whether the whole area included in the present return may be regarded as perfectly stocked.

Forest Survey.

Progress of original surveys.

33. The following work was done by the *Forest Survey Branch* under Captain Bailey from 1st October 1876 to 30th September 1877.

The survey of the Dehra Dún and Saháranpur forests was completed, as was also the survey of the Deota and Lambatach forests in Tirí-Garhwál, all on the scale of 4″=1 mile.

The survey of the reserves in Kumaun and Garhwál was continued, the Naini Tál sub-division of the Kumaun division having been taken in hand. The following list exhibits the forest maps prepared in the office of the Forest Survey Branch:—

Sheets of Dehra Dún and Siwaliks survey, drawn scale 4″=1 mile, Nos. XXVIII, XXIX, XXXVII	3
Sheets of Kumaun and Garhwal survey, drawn scale 4″=1 mile, Nos. XXI, XXVII, XXXII. Sheets 9, 11, 12 reported last year are now Nos. XXVIII, XXXIII, XXXIV	3
Sheets of Jaunsár-Deoban working circle, scale 4″=1 mile	3
Sheets of Dehra Dún and Siwaliks colored, 50 copies of each of sheets VII, XI, XVI, XVII, XVIII, XXV, XXVII, XL, XLI, XLII. 50 copies of sheet II were colored in the office of the Great Trigonometrical Survey	500
Sheets of the map of the Palamow reserved state forests in Bengal, colored	251
Map of the Kulu district, showing proposed forest reserves drawn on ½″=1 mile	1
Copies of a map of the Kulu district, showing proposed forest reserves drawn on ¼″=1 mile, colored. To accompany a printed report	650
Copies of a map of the Sidli Circle, Assam, colored. To accompany printed report	614
Copies of a map of the Simla municipal forests. To accompany a printed report	112

Preparation of forest maps.

34. All the sheets of the Dehra Dún map are now drawn, and copies of the last sheets will shortly be available. In addition to the work detailed in the list, some tracings were supplied to forest and other officers. Captain Bailey also visited and reported on Mr. Ellis's work near Multan and superintended the survey by the same officer of an area of about 1,500 acres situated in the Koti state, which it was proposed to lease in connection with the arrangements for the supply of water to Simla. The Superintendent of Forest Surveys also directed the compilation by Mr. H. C. Hill, Deputy Conservator of Forests, of a forest map of the Prome and Tharawaddy divisions of British Burma. The map in four sheets is now in progress.

The Forest Survey Branch used as a training school.

35. In accordance with the arrangements explained in the review for 1875-76, three junior officers were attached to the Survey Branch for instruction, *viz.*, Mr. Jellicoe from Mysore, Mr. Down from the North-Western Provinces, and Mr. Stewart from the Punjab. These officers were preparing for the higher standard in surveying. The Superintendent of Forest Surveys has also been authorized to grant certificates of qualification in surveying by the lower standard, and accordingly he examined the work done by several candidates.

The expenditure on account of the Forest Survey during the financial year 1876-77 amounted to Rs. 57,504.

CHAPTER II.

UNRESERVED FORESTS.

Bengal

36. In *Bengal*, Chittagong is the only district in which a considerable extent of unreserved forest is partially under the control of the Forest Department. The area is situated in the hill tracts and is estimated at 5,100 square miles with about 80,000 inhabitants, who maintain themselves by jhum cultivation, that is, by clearing and burning the forest. The management of these forests rests with the Deputy Commissioner of the district, and the people are

allowed free of charge all forest produce necessary for their domestic requirements. On forest produce exported for trade, a duty or toll is levied on the rivers coming from the hill tracts. Seven kinds of timber are protected, and logs of these kinds are not allowed to be exported unless they measure 4 feet 6 inches in girth. The names of these kinds are—Jarul (*Lagerstræmia reginæ*), Gamhar (*Gmelina arborea*), Chaplis (*Artocarpus Chaplasha*), Kandeb (?), Toon (*Cedrela Toona*), Chikarassi (*Chikrassia tabularis*), Telsur (*Drimycarpus racemosus*).

Central Provinces.

37. In the *Central Provinces*, the area of the unreserved forests has been reduced from 16,510 to 16,444 square miles. In several districts the resumption of clearance leases caused additions to the area, which aggregated nearly nine square miles. The area excluded amounted to 75 square miles, of which 58 square miles were, as mentioned in paragraph 5, added to the Moharli reserve, while 17 square miles were made available for cultivation. The area included under the term unreserved forests is not, however, all forest, but large tracts are mere waste and not covered by any forest at all.

New system of administration.

38. To the close of the year forest admininistration in the Central Provinces was thus organized,—that the reserved forests were in charge of the Conservator of Forests and his assistants, while the unreserved forests were in charge of Deputy Commissioners of districts, the functions of the Conservator being limited to advice and occasional inspection, and to the appointment of the chief native subordinates. A change of system which had for some time past been contemplated was made in April 1877. The management of the unreserved forests has, wherever this could be arranged, been entrusted to forest officers who are styled district forest officers, and who have, in subordination to the Deputy Commissioner, charge of the unreserved forests in their district. The same officers have also the charge of the reserves, but in this respect they are as hitherto directly subordinate to the Conservator. Great benefits are anticipated from this arrangement, under which the more important unreserved forests will be looked after by forest officers.

Assam.

39. It was explained in the review for 1875-76 that in *Assam* the unreserved forests were in charge of the mouzahdars or village headmen under the control of the Deputy Commissioners. During the year under review it was arranged that the mouzahdars should receive 10 per cent. on any forest revenue they might collect. A modification was also made in the list of reserved trees, and three separate lists of twelve kinds in each were established for Lower and Upper Assam, and for the two districts of Sylhet and Cachar. An important measure was introduced in the Khasi and Jaintia hills, whereby the chiefs of the states in these hills receive their sanads on the condition that they engage to set aside certain forest land for the growth of trees to supply building timber and firewood, and to protect them against destruction by fire or jhuming.

Berar.

40. In *Berar*, the area of the unreserved forests was reduced to 2,758 square miles. As already explained, a new reserve was formed in the Melghât, and in the unreserved forests of that district; all restrictions upon cutting, grazing, or the extension of cultivation were removed. On all produce exported duty continues to be levied at the existing rates. The revenue from teak and unreserved woods, including bamboos and minor produce, compared with that realized on an average during the three previous years, was as follows:—

	Teak.	Other produce.
	Rs.	Rs.
1873-74 to 1875-76	23,136	49,244
1876-77	50,992	39,056

This would seem to indicate a greater run upon teak since the cutting of this wood was no longer restricted to a limited area.

CHAPTER III.

PROTECTION OF GOVERNMENT FORESTS.

41. The number of prosecutions, convictions, and acquittals on account of forest offences in the different provinces appears from the following statement:— Summary.

Prosecutions for breaches of Forest rules during 1876-77.

Provinces.	Number of persons.		
	Prosecuted.	Convicted or under trial.	Acquitted.
Bengal	246	139	107
North-Western Provinces	866	718	148
Punjab	1,243	838	405
Oudh	84	64	20
Central Provinces	967	758	209
British Burma	73	62	11
Coorg	10	10	...
Ajmere	50	45	5
Assam	39	37	2
Total	3,578	2,671	907
Mysore	759*	631	128
Berar	672	515	157
GRAND TOTAL	5,009	3,817	1,192

* 3 cases pending.

As compared with previous years, the total increase of prosecutions has been insignificant, but the percentage of acquittals is larger than usual—23 per cent against 11 per cent in 1875-76. The proportion is largest in *Bengal*—43, and in the *Punjab* 32 per cent. In Bengal, the cases were most numerous in the Sundarbans division, where 217 persons were prosecuted, of whom 114 were convicted, the chief offence being unauthorized felling of trees.

42. In the *North-Western Provinces*, the chief offences were unauthorized felling of wood and appropriation of wood or minor forest produce, for which 573 persons were prosecuted, of which 399 were in the Kumaun forests; and grazing without permission, for which 193 persons were prosecuted, of whom 162 were in the Jaunsar division. Details.

In the *Punjab*, 610 persons were prosecuted for unauthorized felling of wood and appropriation of minor produce, and 436 persons for grazing without permission. The prosecutions were most numerous in Hazara, *viz.*, 223 persons for the first and 144 for the second offence.

In *Oudh*, out of a total of 84 persons prosecuted, 78 were for unauthorized felling and appropriation of minor produce.

In the *Central Provinces*, the figures fluctuate. The prosecutions during the last four years were as follows:—

	Number of persons prosecuted.
In 1873-74	619
„ 1874-75	706
„ 1875-76	1,366
„ 1876-77	967

The prosecutions during 1876-77 are classified as follows:—

1. Injury done by fire	9
2. Unauthorized felling or appropriation of timber	594
3. Unauthorized appropriation of minor forest produce	104
4. Grazing without permission	123
5. Unauthorized breaking up of forest land for cultivation	137
Total	967

168 persons were prosecuted for offences committed within the reserves, and 799 persons for offences committed in the unreserved forests.

In *British Burma*, the prosecutions reported have increased from 29 in 1873-74 to 73 in 1876-77. Considering the large extent of the forests in charge of the Forest Department, it is satisfactory that they are not more numerous.

In the *Mysore* and *Berar* reports, the offences against the forest rules are not specified.

Forest rules made during the year.

43. During the year under review rules were made under Act VII of 1865 for the province of *Assam* (September 1876).

CHAPTER IV.

YIELD AND FINANCIAL RESULTS.

New classification.

44. As mentioned in the review for 1875-76, an improved classification of the heads of receipts and charges was finally adopted in February 1877, and statement I appended to this review exhibits the summary of revenue and expenditure in the provinces under the Government of India, not including the Presidencies of Madras and Bombay under the sub-heads of the new classification. The aim of this new classification is to show as clearly as circumstances will admit, the relation between the chief sources of revenue and the working charges of the Department.

General results.

45. The general results, shown in the usual manner, are exhibited in the following statement, which, as explained in previous reviews, is only approximate. It is framed upon a summary allotment of the amounts entered under each budget sub-head, whereas it ought, and in future it is hoped will, be based upon an analysis in detail made of the annual accounts in each province. But even as it stands, the statement is useful, giving general results with fair approximation :—

Particulars.	Receipts.		Charges.	
	Amounts.	Budget heads.	Amounts.	Budget heads.
	Rs.		Rs.	
1. Timber and other produce removed on Government account	26,81,783	I ...	18,21,025	I, ½ of VI, ½ of B.
2. Timber and other produce removed by purchasers and other revenue	23,81,331	II, III, IV, V	5,57,247	II, III, IV, IX, ½ of VI, ½ of B.
3. Formation, protection, and improvement of the forests .	...	...	10,34,558	V, VII, VIII, ½ of B.
Total .	50,63,114	...	34,12,830	...

Receipts and charges on account of Government timber operations.

46. Of the revenue realized by the sale of timber brought to depôt by Government agency, and the charges incurred on account of the same, the average for the last four years, in round numbers, has been as follows :—

	Charges.	Receipts.
	Rs.	Rs.
1873-74	28,60,000	17,00,000
1874-75	24,34,000	19,16,000
1875 76	35,00,000	16,43,000
1876-77	27,00,000	18,20,000
Average	28,73,500	17,69,750

These operations are subject to unavoidable fluctuations, which are caused by the state of the market and by the varying demands for railways and for other public works. It will be noticed that the small outlay on this account in 1873-74 was followed by small receipts in the succeeding year, and that the heavy outlay in 1874-75 was followed by greatly increased receipts in 1875-76.

47. The remaining forest revenue consists of the following amounts:— Other forest revenue.

	Rs.
Timber removed by purchasers	19,75,264
Confiscated drift and waif wood	46,228
Revenue from forests not managed by Government	2,17,171
Other revenue	1,42,668
TOTAL	23,81,331

And the charges debitable to this revenue amount to Rs. 5,57,247. During the last four years, the average receipts and charges on account of the other sources of revenue have been as follows:—

	Receipts.	CHARGES.		TOTAL.
		Conservancy and works.	Establishment.	
	Rs.	Rs.	Rs.	Rs.
1873-74	24,90,000	1,47,146	2,52,854	4,00,000
1874-75	24,53,861	2,26,271	2,50,734	4,77,005
1875-76	22,73,791	2,55,668	2,67,190	5,22,858
1876-77	23,81,331	2,61,486	2,95,761	5,57,247

It will be noticed that the increase in the charges debited to this class of revenue is partly, but not entirely, due to the increase in the establishment charges, one-fourth of which are debited against this head.

48. The outlay on demarcation, protection, and improvement of the forests, including plantations, has been as follows:— Formation, protection, and improvement of the forests.

		Rs.
1. Demarcation	VIII*a*	27,086
2. Compensation for land and rights	VIII*b*	7,894
3. Surveys and working plans	VIII*c*	16,882
4. Plantations	VIII*d*	1,23,050
5. Protection from fire	VIII*e*	51,416
6. Rent of leased forests	V	61,774
7. Roads and bridges	VII*a*	61,416
8. Buildings	VII*b*	46,140
9. Other works	VII*c*	47,377
		4,43,035
Proportional quota of establishment charges		5,91,523
TOTAL		10,34,558

The work done under heads 1 to 5 has already been detailed; it now remains to explain the outlay under heads 6 to 9.

49. The chief payments for rent of leased forests and to shareholders of forests managed by Government were as follows:— Rent of forests.

	Rs.
North-Western Provinces for lease of forests in Native Garhwal.	10,702
Punjab seigniorage paid to Bashahr under the lease and payments made to the shareholders in Kalesar	6,386
Rent of the Chamba forests	21,000
Jhelum, half seigniorage	8,078
Annual payment to Melghât Rajahs	15,558

50. For communications, buildings, and minor works, the outlay has been heaviest in the following provinces:— Communications and buildings, North-Western Provinces.

		Rs.
North-Western Provinces	communications	34,205
,,	buildings	9,435
,,	other works	2,034
	TOTAL	45,674

This outlay was chiefly incurred in the Kumaun and Jaunsar forest divisions. In Kumaun, a capital cart-road was built, 75 miles long, from Chorgalia at the foot of the hills, right up to Durga Pipal. The Conservator also reports that many miles of paths were made along fire lines, which are very useful both for fire conservancy purposes and for export of timber from the lines and dry timber and bamboos from places hitherto inaccessible. In Jaunsar a new suspension bridge over the Tons at Tadyar, span 146 feet, was completed at the foot of the Deota forest at a cost of Rs. 2,864. Roads were made to open up the Deota forest; and a canal slide was made to bring out sleepers from the Deota forest; its length is 8,700 feet, and it floats out 2,000 broad-gauge sleepers a day. This work, without which the Deota forest cannot be worked, is reported to be a perfect success; owing to the deep cutting and heavy blastings, it cost Rs. 11,450, but more than this outlay will be saved on the carriage of the outturn of the present cuttings, which are estimated to yield 1,30,000 sleepers.

Oudh.

51. In *Oudh*, the outlay on this head has been:—

	Rs.
Roads and bridges	9,500
Buildings	5,542
Other works	3,724
TOTAL	18,766

Much work has been done in the Oudh forests in building rest-houses, constructing wells, and extending the system of roads. Over 400 miles of roads and lines have now been made and are maintained open for traffic, more than three-fourths being good drivable roads. Apart from facilitating fire conservancy and the protection of the forests generally, these roads tend largely to increase the export of dry timber from all parts of these forests. This timber is not exported on account of Government but by traders who take out licenses, and the revenue from this source has risen steadily with the improvement of the forest roads. In 1876-77, this revenue amounted to Rs. 1,60,000 or nearly one half of the total gross revenue derived from the forests.

British Burma.

52. In *British Burma*, steady progress was made in building rest-houses in the forests and in opening out streams for the floating of timber, chiefly by blasting rocks which hitherto obstructed the channel. The outlay on this account has been—

	Rs.
Communications	2,319
Buildings	7,878
Other works	2,573
TOTAL	12,770

Timber and other produce exported on Government account.

53. An attempt has again this year been made to prepare a statement similar to that which accompanied the reviews of 1874-75 and 1875-76, shewing the timber, wood, and bamboos brought from the forests on Government account. This statement does not include the timber and other forest produce which is removed by purchasers, the quantity of which is not known and cannot yet in all cases be ascertained. Nor is the statement complete in other respects. The cubic contents of firewood, bamboos, and of some classes of small timber are not given, and it is obvious that the columns headed "pieces" give no useful information.

Main and minor forest produce.

54. The forests in India, like the forests in other countries, yield two great classes of products, which are generally designated as *main forest produce* and *minor forest produce*. The former consists chiefly of woody fibre; it comprises timber, all kinds of wood, including fuel and bamboos. For this class of produce the cubic foot of solid wood is the proper unit, and there ought to be no difficulty in expressing in cubic feet the quantity of firewood or bamboos yielded by any forest.

Cubic foot of solid wood, the unit also applicable to bamboos.

55. Bamboos are ordinarily sold by the piece, but so are hop poles and sticks for vineyards in Europe, and yet in the returns of yield of a well managed forest the cubic contents of poles and sticks is given in cubic feet. It must be remembered that the unit which we propose to adopt is the cubic foot

of solid wood, and a difficulty may be thought to lie in this that bamboos are hollow. But it will not be difficult to ascertain the weight of a cubic foot of solid bamboo fibre when air-dry,* and from the weight of 100 bamboos of certain kinds and lengths to calculate their cubic contents. In this manner a reducing factor may be obtained for each description of bamboo. The process here recommended is similar to that by which the factor for ascertaining the cubic contents of solid wood in a stock of firewood is determined.

It will take some time before reducing factors for bamboos are ascertained and generally adopted in all provinces; but when this has been accomplished, the annual return of the timber, wood and bamboos brought from the forests on Government account will exhibit the outturn and quantity sold in cubic feet only.

56. The next step will then be to ascertain the quantity of the main produce removed by purchasers and this should likewise be expressed in cubic feet of solid wood. When this end has been attained, it will be possible to exhibit the yield in cubic feet per acre of all demarcated forests the area of which has been determined, and this will be the first important step of progress in the direction of rational forest management.

The quantity of main produce removed by purchasers must be ascertained.

57. The second great class of forest produce which is generally designated as minor forest produce comprises grass, fruits, leaves, bark, gums, resin, caoutchouc, and manufactured produce such as charcoal, cutch and shellac.

Minor forest produce.

The yield of any forest in these articles is most conveniently expressed by weight and by its money value. Grazing is also classed under minor forest produce, and the yield of a forest in this respect can obviously only be expressed by the money value of the pasture.

58. It does not require proof that it is of special importance to maintain an accurate record of the yield per acre in wood, timber, and bamboos; for this material represents not only the main crops of the forest, but in most cases also the working capital or stock-in-trade which must be maintained in order to enable the forest to yield a continuous supply of main and minor produces.† An excessive annual yield per acre of wood, timber, and bamboo, is a certain indication that the forest is deteriorating, and that the working capital or stock-in-trade is diminishing. Hence the importance of adopting a convenient unit of measure.

Importance of an accurate record of the quantities of main produce removed from a forest.

59. The exports of forest produce from India during the year under review have been as follows:—

Export of forest produce beyond India.

	Quantity in tons of 20 cwt., in the case of teak, 50 cubic feet.		Valuation at port of shipment in 1876-77.	
	Average of 6 years, 1870-71—1875-76.	In 1876-77.	Total.	Per ton.
			Rs.	Rs.
1. Caoutchouc	785	665	9,01,693	1,356
2. Shell-lac	3,025	4,494	42,20,497	939
3. Lac-dye	578	953	3,78,556	397
4. Sandalwood, ebony, and other ornamental woods	...	...	2,65,071	...
5. Cutch	9,640	13,247	25,05,515	189
6. Myrobalams	...	17,925	13,50,254	75
7. Teak	46,689	45,108	33,27,644	74

* The weight of a cubic foot of air-dry bamboo fibre may for the present be taken at 45lbs.

† It will be understood that this does not apply to the same extent in the case of forests, which, when mature, are clean cut over and are regenerated by planting.

Export of Sandalwood.

60. Sandalwood sold during the year on account of Government in Mysore and Coorg was :—

		Tons.	Amount realized. Per ton. Rs.	Amount realized. Total. Rs.
Mysore	Good wood	790½	412	3,25,614
	Inferior wood	132¼	20	2,656
Coorg	Good wood	39½	540	21,319
	Inferior wood	...	...	...
	Total	962¼	972	3,49,589

Akyaw wood.

61. The report for the Tenasserim circle of the British Burma forests contains an interesting account of the Akyaw or eagle-wood which grows on the islands of south Tenasserim. It is the produce of *Aquilaria Agallocha*, a large tree with a white soft wood. The eagle-wood is found in old trunks, in the midst of decayed wood, forming irregularly-shaped lumps of hard and scented wood. It is collected by the Selungs, chiefly between April and July, and is sold to Chinese traders. The quantity collected annually is estimated at 1,000 viss, valued at Rs. 10,000. The destruction of these trees is considerable, and it has not yet been possible to take steps to protect them.

Trade in teak timber

62. The quantities of teak timber in British Burma brought from Government forests in British territory, imported from foreign territory, and exported from Rangoon and Moulmein were as follows, as compared with the average quantities during the last six years :—

	Yield of Government forests in British Burma.	Imports from foreign territory.	Exports from Rangoon and Moulmein.
Average of 6 years from 1870-71 to 1875-76	45,943	1,61,615	1,32,865
1876-77	47,433	1,59,398	1,17,720

Only 44,875 tons of the quantity exported were carried to non-Indian ports.

Financial results.

63. Statement III appended to this review gives the forest revenue and expenditure of all provinces during the past thirteen years. As regards surplus revenue, the year has been less favourable than 1873-74 and 1875-76.

Excluding Mysore and Berar, the surplus forest revenue from the British provinces during the last three years was as follows :—

	1874-75. Rs.	1875-76. Rs.	1876-77. Rs.
The Presidency of Bengal	12,94,640	22,86,840	12,51,706
„ „ Madras	(Def. 33,546)	(Def. 3,724)	1,342
„ „ Bombay	4,07,875	4,70,195	3,94,716
Total	16,68,969	27,53,311	16,47,764

STATEMENT I.

Summary of Revenue and Expenditure during the year 1876-77.

Budget Headings	Bengal.	North-Western Provinces.	Punjab.	Oudh.	Central Provinces.	British Burma.	Coorg.	Assam.	Ajmere.	Surveys.	Total of the British Provinces under the Govt. of India.	Mysore.	Berar.	Total of Mysore and Berar.	Grand Total of all Provinces.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Receipts—															
I.—Timber and other produce removed from the forests by Government agency	44,270	4,34,226	3,10,380	1,43,970	1,22,501	11,80,419	37,643	3,969	61	...	22,77,438	3,99,723	4,622	4,04,345	26,81,783
II.—Timber and other produce removed from the forests by consumers or purchasers	1,67,823	3,17,276	2,73,456	2,29,702	4,87,640	93,681	23,772	76,342	471	...	16,70,163	59,524	2,45,577	3,05,101	19,75,264
III.—Confiscated drift and waif wood	1,831	1,552	2,047	3,122	2,914	28,824	2,475	129	...	...	42,894	1,680	1,654	3,334	46,228
IV.—Revenue from forests not managed by Government	...	...	459	...	...	2,16,244	...	468	...	...	2,17,171	...	...	...	2,17,171
V.—Miscellaneous	8,477	8,604	12,412	12,219	48,271	32,300	12,039	661	373	...	1,35,356	6,029	1,283	7,312	1,42,668
Total Receipts	2,22,401	7,61,658	5,98,754	3,99,013	6,61,326	15,51,468	75,929	81,568	905	...	43,43,022	4,66,956	2,53,136	7,20,092	50,63,114
Expenditure.—*A.—Conservancy and Works*—															
I.—Timber and other produce removed from the forests by Government agency	39,066	3,78,632	1,54,177	1,09,051	42,395	6,61,404	14,586	3,687	56	...	14,03,054	61,781	682	62,463	14,65,517
II.—Timber and other produce removed from the forests by consumers or purchasers	3,417	23,853	1,468	3,702	87,591	1,154	...	240	7	...	1,21,432	289	9,640	9,929	1,31,361
III.—Confiscated drift and waif wood	187	503	8,757	19	...	34,316	...	...	...	...	43,782	29	...	29	43,811
IV.—Revenue from forests not managed by Government	...	...	...	...	...	600	...	...	...	...	600	...	...	...	600
V.—Rent of leased forests and payments to shareholders in forests managed by Government	...	10,702	35,464	...	...	...	...	50	...	...	46,216	...	15,558	15,558	61,774
VI.—Live and dead stock	13,811	11,800	5,236	4,852	10,443	48,779	101	18,666	207	1,935	1,15,830	804	2,859	3,663	1,19,493
VII.—Communications and buildings	7,684	45,675	14,656	18,766	5,200	12,770	173	6,942	636	...	1,12,502	5,464	1,745	7,199	1,19,701
VIII.—Demarcation, improvement, and extension of forests	25,115	20,998	49,709	7,768	18,315	58,633	3,621	11,898	10,507	5,749	2,12,313	40,450	8,797	49,247	2,61,560
IX.—Miscellaneous	892	3,189	863	10,492	3,390	4,408	12	522	20	...	23,788	954	1,225	2,179	25,967
Total Conservancy and Works	90,172	4,95,352	2,70,330	1,54,650	1,67,334	8,22,064	18,493	42,005	11,453	7,684	20,79,517	1,09,761	40,506	1,50,267	22,29,784
***B.—Establishments*—**															
I.—Salaries	93,949	1,09,648	1,99,016	65,408	99,790	1,47,973	9,263	41,771	9,343	40,124	8,16,185	1,00,421	43,066	1,43,487	9,59,672
II.—Travelling allowances	13,978	16,677	38,993	10,205	14,607	25,306	4,959	5,117	1,140	6,883	1,37,865	13,351	7,279	20,630	1,58,495
III.—Contingencies	13,590	5,963	14,144	2,346	6,909	9,701	614	1,027	542	2,813	57,749	3,329	3,801	7,130	64,879
Total Establishments	1,21,517	1,32,288	2,52,153	77,959	1,21,306	1,82,980	14,836	47,915	11,025	49,820	10,11,799	1,17,101	54,146	1,71,247	11,83,046
GRAND TOTAL OF EXPENDITURE	2,11,689	6,27,640	5,23,483	2,32,609	2,88,640	10,05,044	33,329	89,920	22,458	57,504	30,91,316	2,26,862	94,652	3,21,514	34,12,830
Surplus	10,712	1,34,018	76,271	1,56,404	3,72,686	5,46,424	42,600	...	...	...	12,51,706	2,40,094	1,58,484	3,98,578	16,50,284
Deficit	...	...	...	...	...	...	...	8,352	21,553	57,504	...	...	...	...	...

STATEMENT II.

Quantity of Timber, Wood, and Bamboos brought to depôts from Government Forests and sold on account of Government in 1876-77.

Provinces.	Brought to Depots.		Sold.		Description.	Whence brought.
	Pieces.	Cubic feet.	Pieces.	Cubic feet.		
Bengal	17,724	1,49,354	17,865	59,873	Chiefly sâl, sissoo, and sundri	Reserves and open forests.
	(9,325	Maunds.	13,425	Maunds.	Fire-wood)	
	(74,720	...	7,005	...	Bamboos)	
North-Western Provinces	(4,62,288	3,38,320	3,61,387	3,77,004	Chiefly deodar and sâl)	Reserves and leased forests.
	(1,86,811	Maunds.	1,50,861	Maunds.	Firewood and charcoal)	
Punjab	81,287	6,51,900	90,705	6,31,176	Chiefly deodar and pines	Reserves and leased forests.
	(5,432	Maunds.	14,206	Maunds.	Fuel)	
	(8,12,529	...	8,06,021	...	Bamboos)	
Oudh	5,557	1,52,050	2,171	80,298	Sâl and asna	Reserves.
	(33,342	Maunds.	61,047	Maunds.	Firewood and charcoal)	
Central Provinces	42,769	1,04,160	27,766	36,022	Chiefly teak and sâl	Reserved and unreserved forests.
	(1,51,297	...	52,779	...	Bamboos)	
British Burma	1,60,613	21,93,118	1,45,039	18,61,755	Chiefly teak	Reserves and undemarcated forests.
	3,16,546	5,300	3,16,546	5,300	Shingles	
Assam	2,624	9,850	653	3,123	Chiefly sâl and ajhar	Reserves.
Coorg	282	6,391	389	7,266	Teak	Reserves and district forests.
	1,114	3,963	2,549	7,381	Junglewood	
	(23,316	...	64,631	...	Bamboos)	
	(2,771	...	3,018	...	Cart loads of firewood)	
	(6,560	...	5,734	...	Firesticks)	
	(52	Tons.	39½	Tons.	Sandalwood)	
Mysore	13,320	31,152	11,982	30,158	Teak	Reserves and district forests.
	15,896	64,919	14,896	75,535	Junglewood	
	(1,84,886	...	1,70,169	...	Bamboos)	
	(1,651	Cartloads.	668	Cart loads..	Firewood)	
	(402	Headloads.	402	Head loads.	Fibre)	
	(750¾	Tons.	790	Tons.	Sandalwood)	
Berar	12,751	(Not given.)	14,286	(Not given.)	Chiefly teak and babul	Reserves and district forests.
Total	11,32,711	37,10,477	10,06,244	31,74,891		

These totals do not include the figures which are bracketed, *viz.*, firewood, charcoal, bamboos, sandalwood and fibre.

STATEMENT III.

Receipts and Charges of the Forest Department throughout India during the thirteen years from 1864-65 to 1876-77.

RECEIPTS.

Provinces.	1864-65.	1865-66.	1866-67 (11 months.)	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	...	38,584	50,555	75,687	2,24,546	1,13,753	1,19,678	1,39,088	1,49,851	1,16,633	1,85,933	1,98,274	2,22,401
North-Western Provinces	6,39,010	6,50,401	5,77,954	5,11,191	6,53,389	7,26,255	3,65,076	10,33,134	16,42,856	16,29,496	10,85,947	9,69,698	7,61,658
Punjab	2,95,730	2,08,050	2,31,470	2,79,297	3,45,164	3,94,132	10,40,368	7,35,002	6,52,994	7,32,540	8,34,874	9,05,742	5,98,754
Oudh	54,634	1,19,969	2,01,246	66,453	1,31,822	1,06,822	60,181	1,37,767	2,96,258	3,03,181	2,77,411	2,94,658	3,89,013
Central Provinces	89,307	2,02,644	3,67,095	3,49,491	3,50,536	4,16,020	6,58,120	4,47,764	4,81,673	5,68,367	6,61,779	7,25,335	6,61,326
British Burma	9,36,233	8,98,629	4,24,053	6,47,590	8,16,171	9,84,773	8,18,124	7,72,399	8,27,469	10,68,621	10,74,802	17,79,020	15,51,468
Coorg	1,02,218	1,08,257	31,934	77,746	74,448	1,08,152	74,067	92,453	84,424	1,10,079	58,012	1,07,457	75,929
Ajmere	...	...	...	...	...	...	...	...	24	508	203	410	905
Assam	...	...	...	...	...	...	...	...	...	62,726	64,749	1,07,302	81,568
Surveys	...	...	...	...	...	...	..	...	...	...	...	...	...
Total	21,17,132	22,26,534	18,84,307	20,07,455	25,96,076	28,49,907	31,35,614	33,57,607	41,35,549	45,92,151	42,43,710	50,87,896	43,43,022
Madras	3,11,778	3,26,204	3,38,608	4,24,184	3,91,179	4,95,789	3,39,762	4,18,882	4,18,767	4,64,194	3,64,326	4,26,359	4,15,312
Bombay and Sind	10,70,210	10,07,610	8,21,268	8,84,245	12,13,482	12,35,257	11,77,425	11,50,210	11,46,404	11,88,090	12,23,995	12,48,672	12,26,658
Total Revenue (British India)	34,99,120	35,60,348	30,44,183	33,15,884	42,00,737	45,80,953	46,52,801	49,26,699	57,00,720	62,44,435	58,32,031	67,62,927	59,84,992
Mysore	3,16,331	3,42,959	2,66,020	4,10,012	3,51,476	2,95,218	3,37,669	3,99,511	3,76,185	4,97,060	3,83,124	4,56,271	4,66,956
Hyderabad	2,368	15,106	43,574	53,446	84,556	1,45,481	1,77,329	1,55,544	2,59,861	2,63,256	2,60,674	2,32,817	2,53,136
Total Revenue (Mysore and Hyderabad)	3,18,699	3,58,065	3,09,594	4,63,458	4,36,032	4,40,699	5,14,998	5,55,055	6,36,046	7,60,316	6,43,798	6,89,088	7,20,092
GRAND TOTAL OF REVENUE	38,17,819	39,18,413	33,53,777	37,79,342	46,36,769	50,21,652	51,67,799	54,81,754	63,36,766	70,04,751	64,75,829	74,52,015	67,05,084

STATEMENT III—*continued.*

A—Expenditure on Conservancy and Works.

Provinces.	1864-65.	1865-66.	1866-67. (11 months.)	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	2,092	19,480	89,326	1,41,382	95,581	61,004	26,272	43,907	28,526	28,552	39,062	68,255	90,172
North-Western Provinces	3,29,983	2,06,272	2,28,186	2,04,249	3,10,303	2,95,969	5,41,957	8,16,519	8,67,314	8,21,813	7,16,878	3,91,385	4,95,352
Punjab	1,62,120	1,94,110	1,76,950	1,75,920	1,93,516	5,55,375	10,30,005	4,78,003	5,45,068	3,54,457	4,19,305	3,18,498	2,70,330
Oudh	52,797	38,886	38,001	70,569	59,566	63,180	52,872	79,412	87,201	1,51,178	1,58,161	1,48,950	1,54,650
Central Provinces	35,610	38,504	46,817	1,13,068	1,86,925	3,65,801	1,95,251	1,24,621	1,33,666	1,67,010	1,78,513	2,40,523	1,67,334
British Burma	1,77,158	2,21,739	2,04,591	2,25,049	3,22,981	3,11,404	2,89,445	2,45,514	2,03,929	3,32,391	5,31,841	6,60,515	8,22,064
Coorg	4,688	3,995	4,425	5,354	7,175	22,851	14,822	20,714	18,324	23,001	23,773	25,991	18,493
Ajmere	...	...	...	...	...	...	...	...	4,878	15,777	17,753	12,963	11,433
Assam	...	...	...	...	...	...	...	...	...	18,901	31,138	33,187	42,005
Surveys	...	...	...	...	...	...	...	...	8,303	7,420	3,906	5,134	7,684
Total	7,64,448	7,22,986	7,88,296	9,35,591	11,76,047	16,75,584	21,50,624	18,08,690	18,97,209	19,20,500	21,20,330	19,05,401	20,79,517
Madras	94,657	1,36,528	1,14,251	1,62,037	1,32,693	1,46,821	1,56,779	1,94,814	3,03,735	1,75,370	2,21,864	2,39,945	1,94,943
Bombay and Sind	3,17,699	5,63,067	4,36,470	3,32,175	3,87,412	3,28,985	3,84,638	3,27,729	4,34,612	4,11,547	5,20,049	4,80,801	5,30,394
Total (British India)	11,76,804	14,22,581	13,39,017	14,29,803	16,96,152	21,51,390	26,92,041	23,31,233	26,35,556	25,07,417	28,62,243	26,26,147	28,04,854
Mysore	14,022	42,979	32,165	52,317	59,274	44,252	81,061	87,326	95,959	1,12,460	1,08,401	1,10,772	1,09,761
Hyderabad	...	...	...	2,184	6,552	22,018	43,034	62,759	45,062	44,117	45,514	42,287	40,506
Total (Mysore and Hyderabad)	14,022	42,979	32,165	54,501	65,826	66,270	1,24,095	1,50,085	1,41,021	1,56,577	1,53,915	1,53,059	1,50,267
GRAND TOTAL	11,90,826	14,65,560	13,71,182	14,84,304	17,61,978	22,17,660	28,16,136	24,81,318	27,76,577	26,63,994	30,16,158	27,79,206	29,55,121

STATEMENT III—*continued.*

B.—Expenditure on Establishments.

Provinces.	1864-65.	1865-66.	1866-67. (11 months).	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bengal	6,604	16,292	14,881	24,223	30,676	34,870	60,186	64,429	71,090	56,936	60,341	70,831	1,21,517
North-Western Provinces	65,739	86,242	83,711	85,139	1,01,475	1,27,441	1,33,928	1,53,751	1,51,698	1,44,693	1,38,997	1,46,529	1,32,288
Punjab	84,665	77,968	78,680	97,955	1,15,828	1,58,279	2,03,951	2,27,321	2,50,874	2,42,705	2,27,175	2,35,728	2,52,153
Oudh	27,154	19,883	21,571	23,065	29,615	42,090	47,119	47,269	56,219	48,256	46,666	49,465	77,959
Central Provinces	61,946	74,994	81,041	99,031	1,07,730	1,08,445	1,12,182	1,07,059	1,11,171	1,16,546	1,15,726	1,30,240	1,21,306
British Burma	86,081	90,327	80,544	1,03,339	99,191	1,10,058	1,11,293	1,32,935	1,32,095	1,42,140	1,30,797	1,54,235	1,82,990
Coorg	4,201	8,654	7,127	8,610	9,301	10,231	9,777	10,267	11,340	11,708	14,226	11,688	14,836
Ajmere	.....	.....	.....	.....	.....	.....	.....	.....	8,177	8,563	8,813	14,383	11,025
Assam	.....	.....	.....	.....	.....	.....	.....	.....	.....	31,721	28,385	28,697	47,915
Surveys	.....	.....	.....	.....	.....	.....	.....	.....	12,875	42,852	57,614	53,859	49,820
Total of Establishment Charges	3,36,390	3,74,360	3,67,555	4,41,362	4,93,816	5,91,414	6,78,436	7,43,031	8,08,539	8,46,120	8,28,740	8,95,655	10,11,799
Total of all Charges	11,00,838	10,97,346	11,55,851	13,76,953	16,69,863	22,66,998	28,29,060	25,51,721	27,05,748	27,66,620	29,49,070	28,01,056	30,91,316
Madras	95,300	1,17,054	1,02,920	1,26,223	1,37,779	1,39,870	1,38,081	1,50,902	1,74,412	1,77,814	1,76,008	1,90,138	2,19,027
Bombay	2,10,352	2,11,987	2,10,973	2,14,962	2,39,711	2,15,811	2,38,125	2,57,035	2,78,430	2,93,990	2,96,071	2,97,676	3,01,548
Total of Establishment Charges (British India)	6,42,042	7,03,401	6,81,448	7,82,547	8,71,306	9,47,095	10,54,642	11,50,968	12,61,381	13,17,924	13,00,819	13,83,469	15,32,374
Total of all Charges (British India)	18,18,846	21,25,982	20,20,465	22,12,350	25,67,458	30,98,485	37,46,683	34,82,201	38,96,937	38,25,341	41,63,062	40,09,616	43,37,228
Mysore	53,018	54,768	53,823	57,725	60,677	59,998	64,381	71,776	96,159	1,23,773	1,28,321	1,24,520	1,17,101
Hyderadad	478	8,991	13,718	16,157	27,553	58,692	38,938	38,071	37,994	41,523	45,875	48,586	54,146
Total of Establishment Charges (Mysore and Hyderabad)	53,496	63,759	67,541	73,882	88,230	1,18,690	1,03,319	1,09,847	1,34,153	1,65,296	1,74,196	1,73,106	1,71,247
Grand total of Establishment Charges	6,95,538	7,67,160	7,48,989	8,56,429	9,59,536	10,65,785	11,57,961	12,60,815	13,95,534	14,83,220	14,75,015	15,56,575	17,03,621
GRAND TOTAL OF ALL CHARGES	18,86,364	22,32,720	21,20,171	23,40,733	27,21,514	32,83,445	39,74,097	37,42,133	41,72,111	41,47,214	44,91,173	43,35,781	46,58,742

STATEMENT III—*concluded.*

C.—Surplus Revenue.

PROVINCES.	1864-65.	1865-66.	1866-67. (11 months.)	1867-68.	1868-69.	1869-70.	1870-71.	1871-72.	1872-73.	1873-74.	1874-75.	1875-76.	1876-77.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
British India, excluding Madras and Bombay	10,16,294	11,29,188	7,28,456	6,30,502	9,26,213	5,82,909	3,06,554	8,05,886	14,29,801	18,25,531	12,94,640	22,86,840	12,51,706
The Presidency of Madras	1,21,821	72,622	1,21,437	1,35,924	1,20,707	2,09,098	44,902	73,166	(Deficit 59,380)	1,11,010	(Deficit 33,546)	(Deficit 3,724)	1,342
,, of Bombay	5,42,159	2,32,556	1,73,825	3,37,108	5,86,359	6,90,461	5,54,662	5,65,446	4,33,362	4,82,553	4,07,875	4,70,195	3,94,716
TOTAL NET REVENUE (BRITISH INDIA)	16,80,274	14,34,366	10,23,718	11,03,534	16,33,279	14,82,468	9,06,118	14,44,498	18,03,783	24,19,094	16,68,969	27,53,311	16,47,764
Mysore	2,49,291	2,45,212	1,80,032	2,99,970	2,31,525	1,90,968	1,92,227	2,40,409	1,84,067	2,60,827	1,46,402	2,20,979	2,40,094
Hyderabad	1,890	6,115	29,856	35,105	50,451	64,771	95,357	54,714	1,76,805	1,77,616	1,69,285	1,41,944	1,58,484
TOTAL NET REVENUE (MYSORE AND HYDERABAD).	2,51,181	2,51,327	2,09,888	3,35,075	2,81,976	2,55,739	2,87,584	2,95,123	3,60,872	4,38,443	3,15,687	3,62,923	3,98,578
GRAND TOTAL OF NET REVENUE	19,31,455	16,85,693	12,33,606	14,38,609	19,15,255	17,38,207	11,93,702	17,39,621	21,64,655	28,57,537	19,84,656	31,16,234	20,46,342

Government Central Press.—No. 209 E., A., & C.—13-12-78.—350.